

What Is Claimed:

1. A receiver section for a spread spectrum communication system incorporating a receiver section, the receiver section comprising:

a plurality of processing units, the processing units configurable to provide a plurality of correlation functions;

a signal acquisition section, the signal acquisition section coupled to receive analog communication signals, the signal acquisition section outputting sampled signals corresponding to a plurality of multipath components, the plurality of processing units receiving data signals and performing correlation functions on the data signals;

a controller, coupled to the processing units over a control signal path, the controller outputting configuration information to the plurality of processing units to configure the plurality of processing units.

2. The receiver section of claim 1, wherein the controller outputs the configuration information to define a configuration of the processing units and the processing units maintain that configuration until the controller outputs a new set of configuration information.

3. The receiver section of claim 2, wherein the configuration information includes information as to whether each of the plurality of processing units is powered or is powered down.

4. The receiver section of claim 1, wherein the processing units each comprise a plurality of configurable correlator resources, the plurality of configurable correlator resources configurable in response to the configuration information.

5. The receiver section of claim 4, wherein the configuration information determines whether a processing unit is powered or powered down and wherein the configuration information determines whether one or more of the plurality of configurable correlator resources is powered within a powered processing unit.

6. The receiver section of claim 4, wherein the controller outputs the configuration information to define a configuration of the processing units and the plurality of configurable resources within the processing units, the processing units and the plurality of configurable resources within the processing units maintaining that configuration until the controller outputs a new set of configuration information.

7. The receiver section of claim 6, wherein the configuration information is in the form of a configuration word.

8. The receiver section of claim 4, wherein the configuration information includes information as to whether each of the plurality of processing units is powered or is powered down and whether each of the plurality of configurable correlator resources within powered processing units is powered.

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9. The receiver section of claim 4, wherein the configuration information includes information as to whether each of the plurality of configurable correlator resources is powered or is powered down.

10. The receiver section of claim 1, wherein the processing units each comprise a plurality of configurable correlator resources, the plurality of configurable correlator resources configurable in response to the configuration information to assume a function selected from the group of early/late timing correlator, pilot correlator, and data channel correlator.

11. The receiver section of claim 10, wherein the controller generates configuration information in response to a change in received multipath signals.

12. The receiver section of claim 1, wherein the processing units each comprise a plurality of configurable correlator resources, the plurality of configurable correlator resources configurable in response to the configuration information to assume a timing function, a pilot function or a data function.

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13. The receiver section of claim 12, wherein the controller generates configuration information in response to a change in received multipath signals.

5 14. The receiver section of claim 12, wherein, for each of the multipath components tracked by the receiver section, the configuration of the processing units configures at least three of the plurality of configurable correlator resources, one of which assumes the timing function, one of which assumes the pilot function and one of which assumes the data function.

15. The receiver section of claim 1, wherein the processing units each comprise a plurality of configurable correlator resources, the plurality of configurable correlator resources configurable in response to the configuration information to assume a timing function, a pilot function or a data function, ones of the plurality of configurable correlator resources that do not assume a timing function, a pilot function or a data function being powered down.

16. The receiver section of claim 10, further comprising:

an interpolator coupled to the signal acquisition section and receiving a sampled data stream, the interpolator generating an interpolated data stream including data derived from the sampled data stream; and

5 a timing selection circuit identifying one of the values of the interpolated data stream as a representative data sample.

17. The receiver section of claim 16, wherein the signal acquisition section comprises an analog to digital converter that generates the sampled data stream, wherein the analog to digital converter is free running.

18. The receiver section of claim 17, further comprising a frequency correction circuit coupled to the interpolator and coupled to adjust a digital frequency outside of the signal acquisition section.

19. The receiver section of claim 16, further comprising a frequency correction circuit coupled to the interpolator and coupled to a multiplier, the multiplier receiving a digital signal and outputting the sampled data stream derotated by a signal responsive to a signal generated by the frequency correction circuit.

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20. The receiver section of claim 16, wherein the interpolated data stream includes the sampled data stream and additional data points representing intervals between sampling times of the sampled data stream.

5 21. The receiver section of claim 16, wherein the timing selection circuit is within a processing unit.

22. The receiver section of claim 10, further comprising:
an interpolator coupled to the signal acquisition section and receiving a sampled data stream, the interpolator generating an interpolated data stream including data derived from the sampled data stream; and
a data bus receiving the interpolated data stream from the interpolator and providing the interpolated data stream to one of the processing units.

23. The receiver section of claim 22, further comprising a control bus distinct from the data bus, the controller coupled to the processing units by the control bus so that the configuration information passes over the control bus.

24. The receiver section of claim 1, wherein the receiver section is in a base station.

25. The receiver section of claim 1, wherein the receiver section is in a mobile handset.

26. The receiver section of claim 1, wherein the receiver section is coupled to a single antenna.

27. The receiver section of claim 1, wherein the receiver section is coupled to plural antennas.

28. A spread spectrum communication receiver, the receiver comprising:
an analog to digital converter receiving a signal and outputting a sampled data stream;
an interpolator receiving the sampled data stream and generating an interpolated data stream including data derived from the sampled data stream; and
a timing selection circuit identifying one of the values of the interpolated data stream as a representative data sample.

29. The spread spectrum communication receiver of claim 28, wherein the interpolated data stream includes the sampled data stream and additional data points representing intervals between sampling times of the sampled data stream.

30. A receiver section for a spread spectrum communication system incorporating a receiver section, the receiver section comprising:

a plurality of processing units, the processing units configurable to provide a plurality of correlation functions;

5 a signal acquisition section, the signal acquisition section coupled to receive analog communication signals, the signal acquisition section outputting a sampled data stream corresponding to a plurality of multipath components at a first oversampled data rate;

an interpolator receiving the sampled data stream and generating an interpolated data stream at a second oversampled data rate greater than the first oversampled first data rate, the plurality of processing units receiving data signals from the interpolated data stream and performing correlation functions on the data signals; and

a combining unit receiving signals processed in a plurality of processing units, the combining unit weighting and combining the signals to generate symbol data.

31. The receiver section of claim 30, wherein the interpolated data stream includes the sampled data stream and data derived from the sampled data stream.

32. The receiver section of claim 31, wherein the signal acquisition section comprises an analog to digital converter, the analog to digital converter sampling at the first oversampled data rate.

5 33. The receiver section of claim 32, wherein the second oversampled data rate is a rate at least two times a chip rate for the sampled data stream.

34. The receiver section of claim 32, wherein the second oversampled data rate is a rate at least four times a chip rate for the sampled data stream.

35. The receiver section of claim 32, wherein the second oversampled data rate is a rate at least eight times a chip rate for the sampled data stream.

36. A receiver section for a spread spectrum communication system incorporating a receiver section, the receiver section comprising:

a plurality of processing units, the processing units configurable to provide a plurality of correlation functions;

5 a signal acquisition section, the signal acquisition section coupled to receive analog communication signals, the signal acquisition section outputting a sampled data stream at a first oversampled data rate;

a modulator coupled to the signal acquisition section receiving and derotating the sampled data stream;

an interpolator coupled to the modulator and receiving the sampled data stream and generating an interpolated data stream at a second oversampled data rate greater than the first oversampled first data rate; and

a frequency detector coupled to the interpolator and determining a frequency correction, the modulator responsive to the frequency correction in derotating the data stream.

37. The receiver section of claim 36, wherein the frequency detector determines a timing offset from the interpolated data stream.